**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class Period\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**The Ginormous Ionic Bonding Packet**

**(Chapter 8)**

Within this packet you will find all that you need to know about ionic bonding and a large amount of practice opportunities. You will not be able to understand the rest of the year of chemistry if you do not understand bonding. Thus it is important that you are able to adequately complete this packet, no matter how grueling it may seem.

**An Ionic Bond**

An ionic bond forms between metals and nonmetals. The valence (outermost) electrons are removed from the metal, giving it an overall positive charge (called a cation). The electrons removed from the metal are added to the nonmetal, giving it an overall negative charge (called an anion). Then, like magnets, the positively charged metal is attracted to the negatively charged nonmetal, and they stick together with what is called an ionic bond. This makes the elements into an ionic compound.

Metals

Nonmetals

Ionic bonds are very strong bonds, so ionic compounds are usually hard and brittle. They tend to have high melting and boiling points (high temperatures are needed to melt or vaporize them). They sometimes will conduct electricity as a solid, but definitely are good conductors of electricity as a liquid or when dissolved in water (because the cations and anions separate).

**Forming an Ionic Bond**

Nonmetals tend to have high electronegativities and metals tend to have low electronegativities. Electronegativity is a measure of how strong an element can pull on another element’s valence electrons. So nonmetals pull harder on the electrons of the metal, and end up pulling away the electrons from the metal.

Now don’t feel bad for the metals, or think that the nonmetals are mean. Both elements end up “happy” when this occurs. The end result of an ionic bond is that all the elements involved obtain a noble gas electron configuration. The noble gases already have full s and p orbitals, so they don’t need to form bonds (this is why they are called the “noble” gases – they do not combine with the other “common” elements.)

Here’s what happens with Lithium and Fluorine:

□ □ □ □ □□□

1s 2s 1s 2s 2p

Li = 1s2 2s1 F = 1s2 2s2 2p5

When an ionic bond forms between Li and F, one electron is transferred:

□ □ □ □ □□□

1s 2s 1s 2s 2p

Li becomes Li+ F becomes F-

After the electron is transferred, the element’s electron configuration changes, and is the same as a noble gas: Li+ = 1s2 = He F- = 1s2 2s2 2p6 = Ne

**Exercise 1**: draw the appropriate number of dots around the symbol to represent it’s dot diagram

1. State in the 1st blank if it is a *metal* or *nonmetal*
2. Determine the number of Valence Electrons in the 2nd blank
3. Determine the charge of the atom in the 3rd blank

C \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_ N \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_

Li \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_ Ba \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_

I \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_ Rb \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_

O \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_ Ca \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_

Cs \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_ Se \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_

Al \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_ In \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_

Na \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_ F \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_

Be \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_ P \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_

Sr \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_ Ga \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_

S \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_ Tl \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_

Cl \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_ Br \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_

Mg \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_ K \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_

**Making an Ionic Compound**

Once the number of electrons that will be gained or lost is known, the **cation** and **anion** are put together to make a compound. Because ionic compounds are neutral overall, the number of the positives from the cation must balance with the number of negatives from the anion.

To keep from having to do math, you need to learn the **criss-cross method**

If an ionic compound is made from Aluminum (Al+3) and Sulfur (S-2) the resulting compound would be Al2S3.

Notice that the charges switch from one to the other, drop the sign, and are written lower.

When criss-crossing, follow the following rules

1. Never write a number 1 (example – H2­O)
2. If they have the same charge, they cancel out. (example Be­+2 and O­-2 ­­would be BeO)

**Note: When writing an ionic compound, always write the metal first**.

**Exercise 2:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **F** | **O** | **N** | **Cl** | **S** | **P** |
| **Li** | 1 | 2 | 3 | 4 | 5 | 6 |
| **Be** | 7 | 8 | 9 | 10 | 11 | 12 |
| **Al** | 13 | 14 | 15 | 16 | 17 | 18 |
| **Na** | 19 | 20 | 21 | 22 | 23 | 24 |
| **Mg** | 25 | 26 | 27 | 28 | 29 | 30 |
| **K** | 31 | 32 | 33 | 34 | 35 | 36 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Se** | **Br** | **I** | **F** | **O** | **P** |
| **Ca** | 37 | 38 | 39 | 40 | 41 | 42 |
| **Ga** | 43 | 44 | 45 | 46 | 47 | 48 |
| **In** | 49 | 50 | 51 | 52 | 53 | 54 |
| **Tl** | 55 | 56 | 57 | 58 | 59 | 60 |
| **Rb** | 61 | 62 | 63 | 64 | 65 | 66 |
| **Sr** | 67 | 68 | 69 | 70 | 71 | 72 |

**Naming Binary Ionic Compounds**

Procedure

1. Say the name of the first element (the cation) by finding it on the periodic table
2. Say the name of the second element (the anion) by finding it on the periodic table. Since these are regular (AKA representative) elements, change the ending to ide.

Nitrogen = Nitride Sulfur = Sulfide

Oxygen = Oxide Chlorine = Chloride

Fluorine = Fluoride Selenium = Selenide

Phosphorus = Phosphide Bromine = Bromide

Iodine = Iodide

Examples: LiF = lithium fluoride

CaBr2 = calcium bromide

**Notice that the subscripts have no effect on the name of binary ionic compounds**.

**Exercise 3:**

For each of the compounds made in the grids in exercise 2, write the name of the compounds.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 12. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 14. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 16. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

17. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 18. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

19. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 20. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

21. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 22. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

23. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 24. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

25. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 26. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

27. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 28. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

29. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 30. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

31. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 32. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

33. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 34. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

35. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 36. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

37. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 38. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

39. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 40. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

41. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 42. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

43. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 44. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

45. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 46. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

47. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 48. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

49. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 50. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

51. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 52. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

53. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 54. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

55. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 56. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

57. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 58. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

59. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 60. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

61. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 62. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

63. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 64. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

65. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 66. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

67. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 68. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

69. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 70. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

71. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 72. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Writing Binary Ionic Compound Formulas from their Names**

**Exercise 4:**

Procedure - Look up the charges on the periodic table, and criss-cross.

1. Lithium Selenide \_\_\_\_\_\_\_\_\_\_\_ 2. Lithium Bromide \_\_\_\_\_\_\_\_\_\_\_

3. Lithium Iodide \_\_\_\_\_\_\_\_\_\_\_ 4. Beryllium Selenide \_\_\_\_\_\_\_\_\_\_\_

5. Beryllium Bromide \_\_\_\_\_\_\_\_\_\_\_ 6. Beryllium Iodide \_\_\_\_\_\_\_\_\_\_\_

7. Calcium Nitride \_\_\_\_\_\_\_\_\_\_\_ 8. Aluminum Selenide \_\_\_\_\_\_\_\_\_\_\_

9. Gallium Chloride \_\_\_\_\_\_\_\_\_\_\_ 10. Sodium Bromide \_\_\_\_\_\_\_\_\_\_\_

11. Magnesium Iodide \_\_\_\_\_\_\_\_\_\_\_ 12. Indium Sulfide \_\_\_\_\_\_\_\_\_\_\_

13. Thallium Nitride \_\_\_\_\_\_\_\_\_\_\_ 14. Rubidium Chloride \_\_\_\_\_\_\_\_\_\_\_

15. Potassium Selenide \_\_\_\_\_\_\_\_\_\_\_ 16. Strontium Sulfide \_\_\_\_\_\_\_\_\_\_\_

17. Strontium Nitride \_\_\_\_\_\_\_\_\_\_\_ 18. Aluminum Bromide \_\_\_\_\_\_\_\_\_\_\_

19. Sodium Selenide \_\_\_\_\_\_\_\_\_\_\_ 20. Magnesium Bromide \_\_\_\_\_\_\_\_\_\_\_

21. Potassium Iodide \_\_\_\_\_\_\_\_\_\_\_ 22. Calcium Sulfide \_\_\_\_\_\_\_\_\_\_\_

23. Gallium Nitride \_\_\_\_\_\_\_\_\_\_\_ 24. Indium Chloride \_\_\_\_\_\_\_\_\_\_\_

25. Thallium Sulfide \_\_\_\_\_\_\_\_\_\_\_ 26. Rubidium Nitride \_\_\_\_\_\_\_\_\_\_\_

27. Strontium Chloride \_\_\_\_\_\_\_\_\_\_\_ 28. Aluminum Iodide \_\_\_\_\_\_\_\_\_\_\_

29. Sodium Iodide \_\_\_\_\_\_\_\_\_\_\_ 30. Magnesium Selenide \_\_\_\_\_\_\_\_\_\_\_

31. Potassium Bromide \_\_\_\_\_\_\_\_\_\_\_ 32. Calcium Chloride \_\_\_\_\_\_\_\_\_\_\_

33. Gallium Sulfide \_\_\_\_\_\_\_\_\_\_\_ 34. Indium Nitride \_\_\_\_\_\_\_\_\_\_\_

35. Thallium Chloride \_\_\_\_\_\_\_\_\_\_\_ 36. Rubidium Sulfide \_\_\_\_\_\_\_\_\_\_\_

**Ionic Bonding with Polyatomic Ions**

Polyatomic ions are groups of elements (poly = many) that have a charge. Polyatomic ions look complicated, but they function just the same as elements in the previous sections.

NH4 +1 Ammonium OH -1 Hydroxide

C2H3O2 -1 Acetate ClO-1 Hypochlorite

AsO4 -3  Arsenate HPO4 -2 Hydrogen Phosphate

AsO3 -3 Arsenite HPO3 -2 Hydrogen Phosphite

HCO3 - 1 Bicarbonate NO3 -1 Nitrate

HSO4 -1 Bisulfate NO2 -1 Nitrite

HSO3 -1 Bisulfite C2O4 -2 Oxalate

BO3 -3 Borate ClO4 -1 Perchlorate

CO3 -2 Carbonate O2 -2 Peroxide

ClO3 -1 Chlorate MnO4 - 1 Permanganate

ClO2 -1 Chlorite PO4 -3 Phosphate

CrO4 -2 Chromate PO3 -3 Phosphite

CNO -1 Cyanate SiO3 -2 Silicate

CN -1 Cyanide SO4 -2 Sulfate

Cr2O7 -2 Dichromate SO3 -2 Sulfite

H2PO4 -1 Dihydrogen Phosphate CNS -1 Thiocyanate

H2PO3 -1 Dihydrogen Phosphite S2O3 -2 Thiosulfate

Fe(CN)6 -3 Ferricyanide IO3-1 Iodate

Fe(CN)6 -4 Ferrocyanide IO4-1 Periodate

When criss-crossing, polyatomic ions work as a group. The only new thing to know is that if you have more than one polyatomic ion, use parentheses around the ion.

Examples: Lithium and Arsenate Beryllium and Arsenate

Li+1 and AsO4 -3 Be+2 and AsO4 -3

Li3AsO4  Be3(AsO4)2

**Exercise 5:**

Procedure – Criss-cross according to the instructions above

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **C2H3O2 -1** | **CO3 -2** | **ClO3 -1** | **H2PO4 -1** | **OH -1** | **NO3 -1** |
| **Li+1** | 1 | 2 | 3 | 4 | 5 | 6 |
| **Mg+2** | 7 | 8 | 9 | 10 | 11 | 12 |
| **Ga+3** | 13 | 14 | 15 | 16 | 17 | 18 |
| **Rb+1** | 19 | 20 | 21 | 22 | 23 | 24 |
| **In+3** | 25 | 26 | 27 | 28 | 29 | 30 |
| **NH4 +1** | 31 | 32 | 33 | 34 | 35 | 36 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **NO2 -1** | **MnO4 -1** | **PO4 -3** | **PO3 -3** | **SO4 -2** | **CNS -1** |
| **Be+2** | 37 | 38 | 39 | 40 | 41 | 42 |
| **Al+3** | 43 | 44 | 45 | 46 | 47 | 48 |
| **Tl+3** | 49 | 50 | 51 | 52 | 53 | 54 |
| **K+1** | 55 | 56 | 57 | 58 | 59 | 60 |
| **Ca+2** | 61 | 62 | 63 | 64 | 65 | 66 |
| **NH4 +1** | 67 | 68 | 69 | 70 | 71 | 72 |

**Naming Ionic Compounds with Polyatomic Ions**

When naming polyatomic ions, you simply look them up on the chart and write them down. The endings do not change.

Examples: LiC2H3O2 = lithium acetate

NH4OH = ammonium hydroxide

**Exercise 6:**

For each of the compounds made in the grids in exercise 5, write the name of the compounds.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 12. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 14. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 16. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

17. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 18. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

19. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 20. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

21. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 22. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

23. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 24. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

25. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 26. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

27. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 28. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

29. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 30. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

31. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 32. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

33. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 34. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

35. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 36. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

37. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 38. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

39. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 40. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

41. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 42. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

43. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 44. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

45. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 46. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

47. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 48. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

49. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 50. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

51. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 52. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

53. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 54. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

55. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 56. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

57. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 58. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

59. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 60. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

61. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 62. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

63. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 64. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

65. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 66. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

67. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 68. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

69. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 70. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

71. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 72. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Writing Ionic Compound Formulas from their Names**

**Exercise 7:**

Procedure – Look up the symbols and charges from the periodic table and polyatomic ion chart

Hint – Polyatomic ions usually end in ate or ite. Be familiar with the ones that don’t. Everything else is on the periodic table. Remember if the second name ends in ide then it probably was a regular element (there are few polyatomic ions that end in ide though).

1. Lithium Arsenate \_\_\_\_\_\_\_\_\_\_\_ 2. Beryllium Arsenite \_\_\_\_\_\_\_\_\_\_\_

3. Sodium Bicarbonate \_\_\_\_\_\_\_\_\_\_\_ 4. Magnesium Bisulfate \_\_\_\_\_\_\_\_\_\_\_

5. Aluminum Bisulfite \_\_\_\_\_\_\_\_\_\_\_ 6. Potassium Borate \_\_\_\_\_\_\_\_\_\_\_

7. Calcium Chlorite \_\_\_\_\_\_\_\_\_\_\_ 8. Gallium Chromate \_\_\_\_\_\_\_\_\_\_\_

9. Rubidium Cyanate \_\_\_\_\_\_\_\_\_\_\_ 10. Strontium Cyanide \_\_\_\_\_\_\_\_\_\_\_

11. Indium Dichromate \_\_\_\_\_\_\_\_\_\_\_ 12. Cesium Ferricyanide \_\_\_\_\_\_\_\_\_\_\_

13. Barium Ferrocyanide \_\_\_\_\_\_\_\_\_\_\_ 14. Thallium Hypochlorite \_\_\_\_\_\_\_\_\_\_\_

15. Ammonium Oxalate \_\_\_\_\_\_\_\_\_\_\_ 16. Ammonium Perchlorate \_\_\_\_\_\_\_\_\_\_\_

17. Lithium Peroxide \_\_\_\_\_\_\_\_\_\_\_ 18. Beryllium Silicate \_\_\_\_\_\_\_\_\_\_\_

19. Sodium Sulfite \_\_\_\_\_\_\_\_\_\_\_ 20. Magnesium Thiosulfate \_\_\_\_\_\_\_\_\_\_\_

21. Aluminum Arsenate \_\_\_\_\_\_\_\_\_\_\_ 22. Potassium Bisulfate \_\_\_\_\_\_\_\_\_\_\_

23. Calcium Bisulfite \_\_\_\_\_\_\_\_\_\_\_ 24. Gallium Borate \_\_\_\_\_\_\_\_\_\_\_

25. Rubidium Acetate \_\_\_\_\_\_\_\_\_\_\_ 26. Strontium Chlorate \_\_\_\_\_\_\_\_\_\_\_

27. Indium Chlorite \_\_\_\_\_\_\_\_\_\_\_ 28. Cesium Cyanide \_\_\_\_\_\_\_\_\_\_\_

29. Barium Nitrate \_\_\_\_\_\_\_\_\_\_\_ 30. Thallium Nitrite \_\_\_\_\_\_\_\_\_\_\_

31. Ammonium Sulfite \_\_\_\_\_\_\_\_\_\_\_ 32. Ammonium Peroxide \_\_\_\_\_\_\_\_\_\_\_

33. Lithium Permanganate \_\_\_\_\_\_\_\_\_\_\_ 34. Aluminum Oxalate \_\_\_\_\_\_\_\_\_\_\_

35. Cesium Oxalate \_\_\_\_\_\_\_\_\_\_\_ 36. Indium Hypochlorite \_\_\_\_\_\_\_\_\_\_\_

**Ionic Compounds with Transition Metals**

Chromium +2 Chromous **Chromium (II)**

+3 **Chromium (III)**

+6 Chromic **Chromium (VI)**

Cobalt +2 Cobaltous **Cobalt (II)**

+3 Cobaltic **Cobalt (III)**

Copper +1 Cuprous **Copper (I)**

+2 Cupric **Copper (II)**

Gold +1 Aurous **Gold (I)**

+3 Auric **Gold (III)**

Iron +2 Ferrous **Iron (II)**

+3 Ferric **Iron (III)**

Manganese +2 Manganous **Manganese (II)**

+3 **Manganese (III)**

+4 **Manganese (IV)**

+7 Manganic **Manganese (VII)**

Mercury +1 Mercurous **Mercury (I)**

+2 Mercuric **Mercury (II)**

Nickel +2 Nickelous **Nickel (II)**

+3 Nickelic **Nickel (III)**

Some other representative metals are not transition metals, but also have multiple charges and are named in the same way:

Lead +2 Plumbous **Lead (II)**

+4 Plumbic **Leand (IV)**

Tin +2 Stannous **Tin (II)**

+4 Stannic **Tin (IV)**

Bismuth +3 Bismuthous **Bismuth (III)**

+5 Bismuthic **Bismuth (V)**

Antimony +3 Antimonous **Antimony (III)**

+5 Antimonic **Antimony (V)**

Also, several transition metals only have one charge possible:

Cadmium Cd+2 ‌ Silver Ag+1 Zinc Zn+2

**Exercise 8:**

Procedure - Look up the charge from the transition elements chart and criss-cross

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **N-3** | **S-2** | **Br-1** | **F-1** | **OH -1** | **SO4 -2** |
| **Chromium (III)** |  |  |  |  |  |  |
| **Cobaltic** |  |  |  |  |  |  |
| **Cuprous** |  |  |  |  |  |  |
| **Cupric** |  |  |  |  |  |  |
| **Gold (III)** |  |  |  |  |  |  |
| **Iron (II)** |  |  |  |  |  |  |
| **Ferric** |  |  |  |  |  |  |
| **Manganese (IV)** |  |  |  |  |  |  |
| **Mercuric** |  |  |  |  |  |  |
| **Nickelous** |  |  |  |  |  |  |

**Naming Ionic Compounds with Transition Metals**

If your molecule starts with a transition element (from the chart), then you must indicate what its charge is when you name it. Look at the examples to figure out how to find the charge.

Examples: FeO Fe2O3

Oxygen must have a -2 charge Oxygen must have a -2 charge

There is 1 oxygen There are three oxygens

The total negative charge is -2 The total negative charge is -6

The total positive charge must be +2 The total positive charge must be +6

There is 1 iron There are two irons

Thus the iron has a +2 charge Thus each iron has a +3 charge

(+2 / 1 = +2) (+6 / 2 = +3)

Thus we name this Iron, Iron (II) or Ferric Name this Iron, Iron (III) or Ferrous

**Exercise 9:**

[In this part 1, use the CLASSIC SYSTEM for naming the transition metals.

1. CrSe \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. CrO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. CoN \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 4. CuCl \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. AuCl3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 6. Fe3P2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. MnF7 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 8. Hg2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. NiS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 10. NiCl3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_]

In this part 2, use the STOCK SYSTEM for naming the transition metals.

11. CrN \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 12. CoI2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. Cu3N2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 14. Au3P \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. Fe2Se3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 16. MnF2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

17. HgCl2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 18. MnP \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

19. MnO2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 20. NiN \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Writing Ionic Compound Formulas from their Names**

**Exercise 10:**

Procedure – Look up charges, and formulas then criss-cross. The anion (second name) will be a polyatomic ion or regular element. Most “ide” endings are regular elements on the periodic table.

1. Chromium (III) Phosphate \_\_\_\_\_\_\_\_\_\_ 2. Nickelic Bromide \_\_\_\_\_\_\_\_\_\_

3. Cobaltous Phosphide \_\_\_\_\_\_\_\_\_\_ 4. Mercury (II) Phosphide \_\_\_\_\_\_\_\_\_\_

5. Auric Oxide \_\_\_\_\_\_\_\_\_\_ 6. Manganous Selenide \_\_\_\_\_\_\_\_\_\_

7. Copper (I) Carbonate \_\_\_\_\_\_\_\_\_\_ 8. Iron (III) Acetate \_\_\_\_\_\_\_\_\_\_

9. Manganese (IV) Silicate \_\_\_\_\_\_\_\_\_\_ 10. Chromous Iodide \_\_\_\_\_\_\_\_\_\_

11. Mercury (I) Phosphide \_\_\_\_\_\_\_\_\_\_ 12. Cobaltic Phosphide \_\_\_\_\_\_\_\_\_\_

13. Manganese (III) Hydroxide \_\_\_\_\_\_\_\_\_\_ 14. Nickelous Chloride \_\_\_\_\_\_\_\_\_\_

15. Chromium (VI) Sulfite \_\_\_\_\_\_\_\_\_\_ 16. Manganese (VII) Sulfite \_\_\_\_\_\_\_\_\_\_

17. Cupric Phosphide \_\_\_\_\_\_\_\_\_\_ 18. Gold (I) Iodide \_\_\_\_\_\_\_\_\_\_

19. Ferrous Chloride \_\_\_\_\_\_\_\_\_\_ 20. Nickel (III) Thiosulfate \_\_\_\_\_\_\_\_\_\_

**Mixed Practice: - This is what your test will look like! Just less problems. Make sure you understand this before testing.**

Write the names to the following compounds.

If the metal has multiple charges, use the stock system.

1. Ca(OH)2

2. K2Cr2O7

3. Ag3P

4. (NH4)2SO4

5. Cd(CN)2

6. CuSO3

7. Fe(NO3)3

8. HgCl

9. Mn(OH)3

10. CrAsO4

11. CrF2

12. Na2SiO3

13. Sb2S5

14. Al(BrO3)3

15. Bi2O3

16. AuI

17. Mn(OH)2

18. SnCl4

19. K2CrO4

20. Ag3PO4

21. Mg3(PO3)2

22. ZnS

23. Ba(IO3)2

24. CuI

25. FeC2O4

26. MnCO3

27. Ni(ClO)2

28. SnBr4

29. Pb(MnO4)2

30. Bi2O5

31. AuHSO3

32. CuC2H3O2

33. Hg3PO4

34. Sr(HCO3)2

35. Cr(IO3)3

36. Li3As

37. Ni(IO4)2

38. CaCO3

39. FeO

40. AlCl3

41. AgCl

42. Ca3(PO4)2

Write the formulas for the following compounds.

Don’t forget to reduce when necessary..

43. Chromium (II) Borate

44. Sodium Chlorite

45. Ammonium Sulfite

46. Plumbous Carbonate

47. Cupric Silicate

48. Ferric Bromate

49. Stannic Oxide

50. Magnesium Dihydrogen Phosphate

51. Ammonium Bromide

52. Ferrous Phosphate

53. Mercuric Cyanate

54. Barium Peroxide

55. Stannic Phosphate

56. Potassium Thiocyanate

57. Cuprous Carbonate

58. Silver Oxalate

59. Antimony (III) Sulfide

60. Mercuric Cyanide

61. Cobalt (III) Sulfide

62. Zinc Phosphide

63. Stannous Phosphate

64. Lithium Arsenate

65. Silver Sulfide

66. Aluminum Ferrocyanide

67. Sodium Hydroxide

68. Ammonium Arsenate

69. Cobalt (III) Thiosulfate

70. Aurous Hydrogen Phosphite

71. Sodium Nitride

72. Sodium Nitrite

73. Iron (III) Oxide

74. Magnesium Chloride

75. Cuprous Oxide

76. Potassium Sulfate

77. Potassium Sulfite

78. Potassium Sulfide

79. Magnesium Selenide

80. Lead (II) Sulfate

81. Calcium Phosphate

82. Strontium Peroxide

83. Ammonium Carbonate

84. Ferrous Periodate